

many unfigured species remain to be investigated it is not attempted to do so at this time. Acknowledgment is made to Mr. George Willett of the Los Angeles Museum for the use of specimens, assistance in securing photographs and in the preparation of these notes.

THE FAUNA OF THE "CHAMPLAIN SEA" OF VERMONT

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The Pleistocene "Champlain Sea" has long been recognized in Vermont, and scattered references to its fauna can be found throughout the literature. Goldring,¹ discussing the mollusks of this sea in New York State, gives numerous references to Vermont localities.

During several brief field trips in the summers of 1933, 1934, and 1935, it was possible to visit most of the known Pleistocene fossil localities in the State of Vermont and to obtain material from them; in addition, numerous new localities were discovered and their fauna studied. Furthermore, fossils from the Pleistocene of Vermont were examined in the Museum at the University of Vermont in Burlington, and were borrowed from the Vermont Historical Society at Montpelier.²

Deposits of the "Champlain Sea" are thought to be of late-Wisconsin age, and extend throughout the entire St. Lawrence Valley from the Gulf almost to Lake Ontario (Prescott, Ont.), as well as along various tributaries of the St. Lawrence, and southward into Lake Champlain. The extent of this sea has been well mapped by Goldring. In Vermont, fossil shells have been found as far south as Chimney Point.

¹ Goldring, Winifred: The Champlain Sea, N. Y. State Mus. Bull. 239-40, pp. 53-94 (1922).

² These studies were made possible by funds from the Department of Geology of Princeton University and the Carnegie Institution of Washington.

Fossils can be found at a great many places near the shores of Lake Champlain from Chimney Point to the Canadian border. An accurate list of localities would be of little use because most of these localities were of a temporary nature, and new material could easily be obtained from shallow excavations in the same vicinity.

Fossils were collected near Alburgh, Isle La Motte, S. Hero, Grand Isle, Swanton, St. Albans, Colchester, Winooski, Malletts Bay, Charlotte, Vergennes, Panton, and Chimney Point. Those from the southern part of the lake suggest more brackish waters and at Chimney Point only *Macoma balthica* (L.) and *Leda glacialis* Wood were found.

Probably the best collecting localities were a small clay pit about a mile and a half west of St. Albans on the road to St. Albans Bay; bluffs along the Missisquoi River east of Swanton, and bluffs on Isle La Motte, on the road to the Chazy Ferry. The locality at Malletts Bay, frequently mentioned in the literature, was not found to be very fruitful.

A more complete study of the fauna with synonymy and detailed discussions of distribution, recent and Pleistocene, is to be published elsewhere. The following is the list of species examined by the writers from the Pleistocene of Vermont:

Macoma balthica (Linné). Abundant at practically every locality: Alburgh, Isle La Motte, S. Hero, Grand Isle, Swanton, St. Albans, Colchester, Winooski, Malletts Bay, Charlotte, Vergennes, Panton, Chimney Point.

Saxicava arctica Linné. Next to *M. balthica* the most abundant shell: Alburgh, Isle La Motte, S. Hero, Grand Isle, Swanton, St. Albans, Malletts Bay, Panton.

Mya arenaria Linné. Alburgh, Isle La Motte, Colchester.

Yoldia glacialis Wood. St. Albans, Malletts Bay, Chimney Point.

Macoma calcarea (Gmelin). Swanton, Malletts Bay.

Mytilus edulis Linné. Swanton, Isle La Motte (abundant), S. Hero, St. Albans, Malletts Bay.

Cryptodon gouldii Philippi. Malletts Bay.

Cylichna alba (Brown). St. Albans.



Balanus crenatus Bruguière. Isle La Motte, Grand Isle, St. Albans, Burlington.

A few other species have been reported in the literature: some are undoubtedly synonymous with certain of the species listed above. The presence of a few other species could not be verified, either from our field work or from the examination of the various collections, and therefore they are omitted here; they will, however, be discussed in a later report.

SOME NOTES ON AN OLD RACE OF CALIFORNIA LAND SNAIL WITH DESCRIPTIONS OF THREE NEW FORMS

BY G. DALLAS HANNA AND ALLYN G. SMITH

HELMINTHOGLYPTA CARPENTERI (Newcomb). Plate 1, figure *a*.

This snail has long been imperfectly known, for good material has not been available for study and comparison with allied forms until the last few years. Because of the heat and consequent dryness of its habitat, *H. carpenteri* is a difficult shell to find in first-class adult condition. Although we have not examined them, Bartsch¹ has no doubt correctly assigned specimens in the National Museum from Maricopa and McKittrick in western Kern County, California, to *carpenteri*. Recent collecting has resulted in many lots of this shell, which add so much to knowledge of it that the following notes may be of interest, especially to students of the *traskii* group.

The shells are extremely variable in size, as a subsequent table of measurements shows, and we have good reason to suspect that this variability is due in large part to the variation in rainfall (and therefore in snail food) from season to season. The measurements also show, however, that the general form of the shell is remarkably constant.

In life the shells are semi-polished, of a beautiful straw color. The dark brown band has one of pale cream color below, and another rather indefinite one of the same color above. Spiral sculpture is faint but easily detected on the last two whorls under a magnification of $\times 10$ and is fairly uniform over the surface of

¹ Bartsch, Paul, Proc. U. S. N. M., Vol. 51, No. 2170, 1916, pp. 617-8, pl. 115, figs. 4-6.